Hazard Analysis

An Integrated Approach

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U.S. Department of Energy
Pacific Northwest National Laboratory

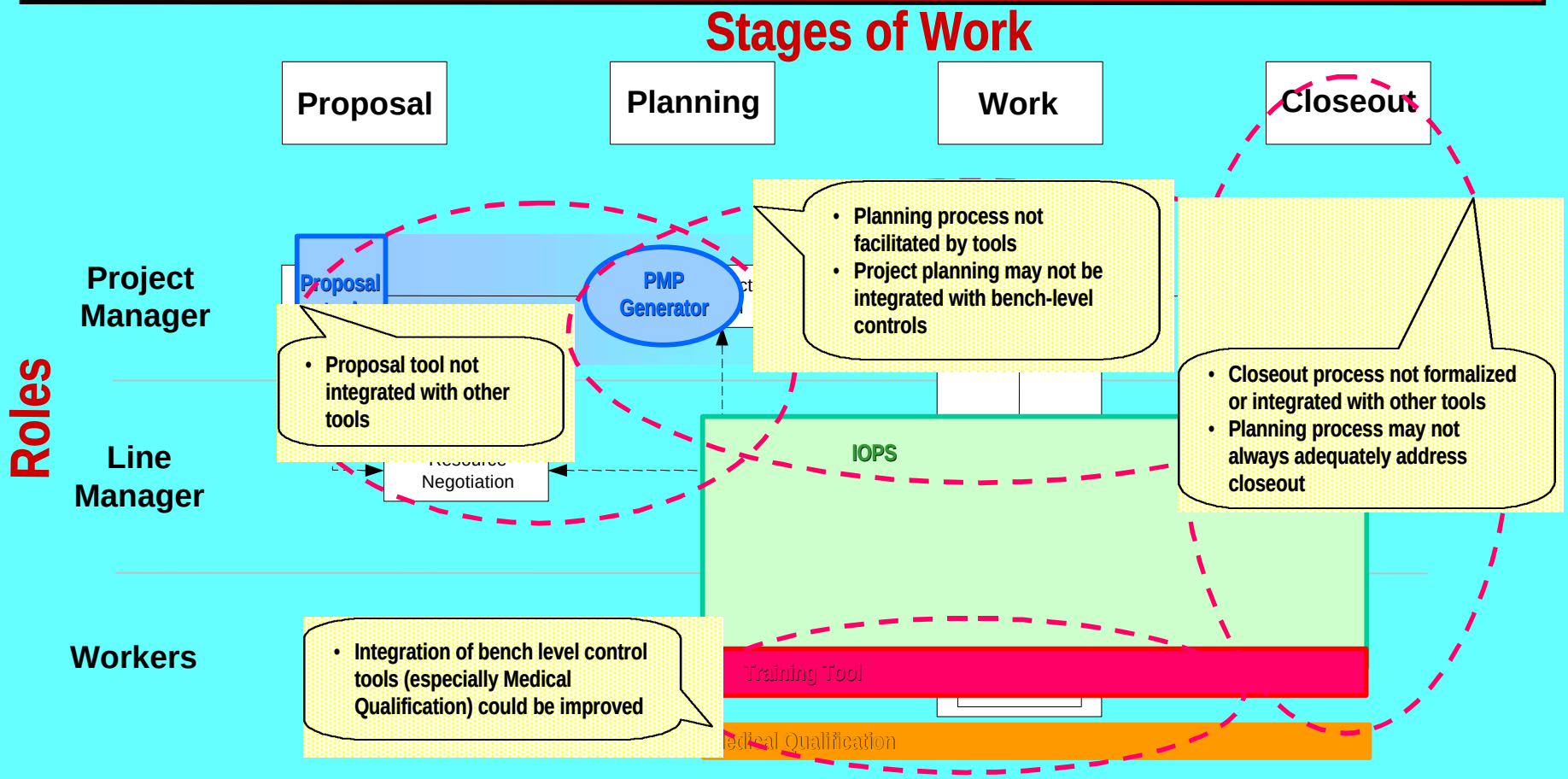
Basis for Work at PNNL

- Clear Roles, Responsibilities, Accountabilities, and Authorities
  - Line managers are responsible for ES&H
  - Project Managers must plan for ES&H
- The basic unit of work is the Project
- Hazards are controlled “at the bench” through Integrated Operations (IOPS), a tool in which
  - Line managers empower Cognizant Space Managers to:
    - control access to work space
    - perform self-assessments
    - ensure work is performed safely

IESHMS Implementing tools

- Standards-Based Management System
  - Lab-level requirements: R^2A^2, Subject Areas, Requirements Management
- Electronic Prep & Risk
  - R&D proposal planning
- Integrated Operations
  - Facility-specific requirements
  - Worker ownership/empowerment
  - Bench-level controls
  - Access Control

Work Planning and Control Process (current)

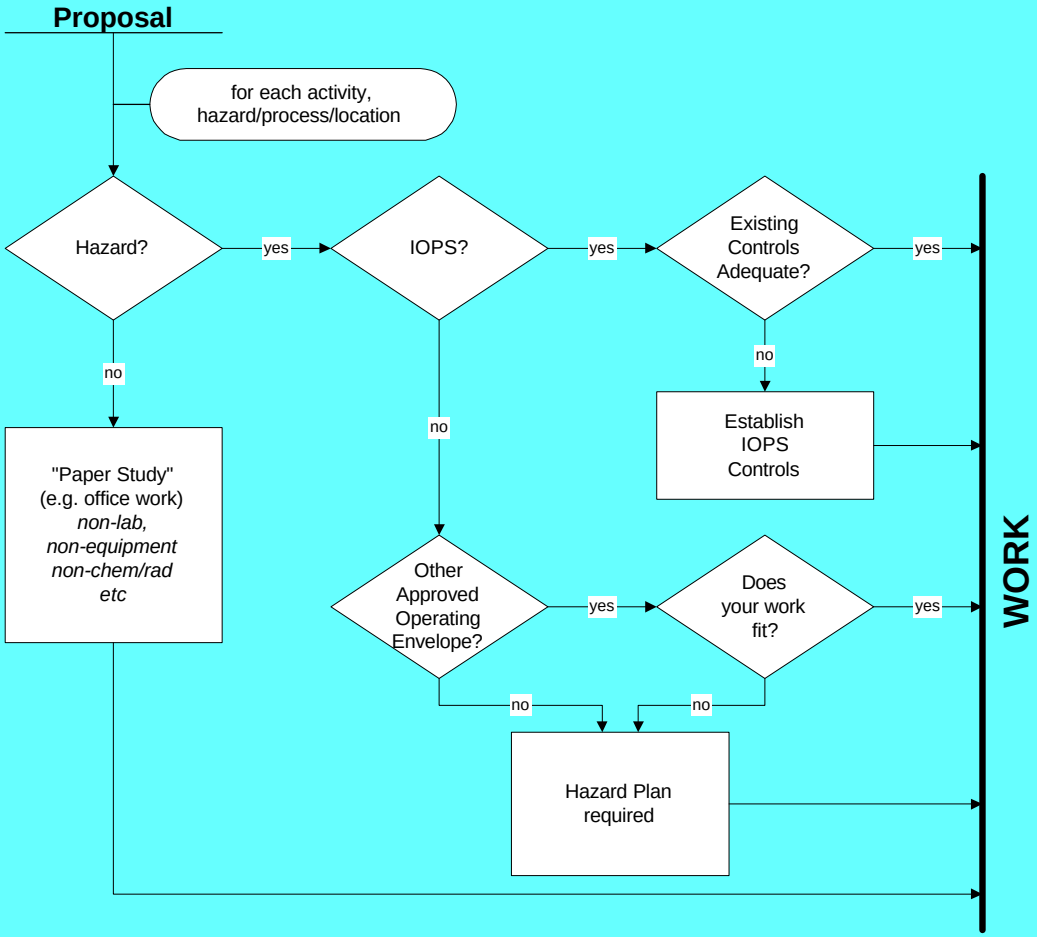


Issues

- New/improved tools needed to bridge gaps in planning and work control process
- Need communication/hand-off of information between tools
  - Common data definitions
- Need to inform appropriate roles about hazard analysis information

Note: Tools cannot solve problems
People need to use processes correctly
to avoid problems

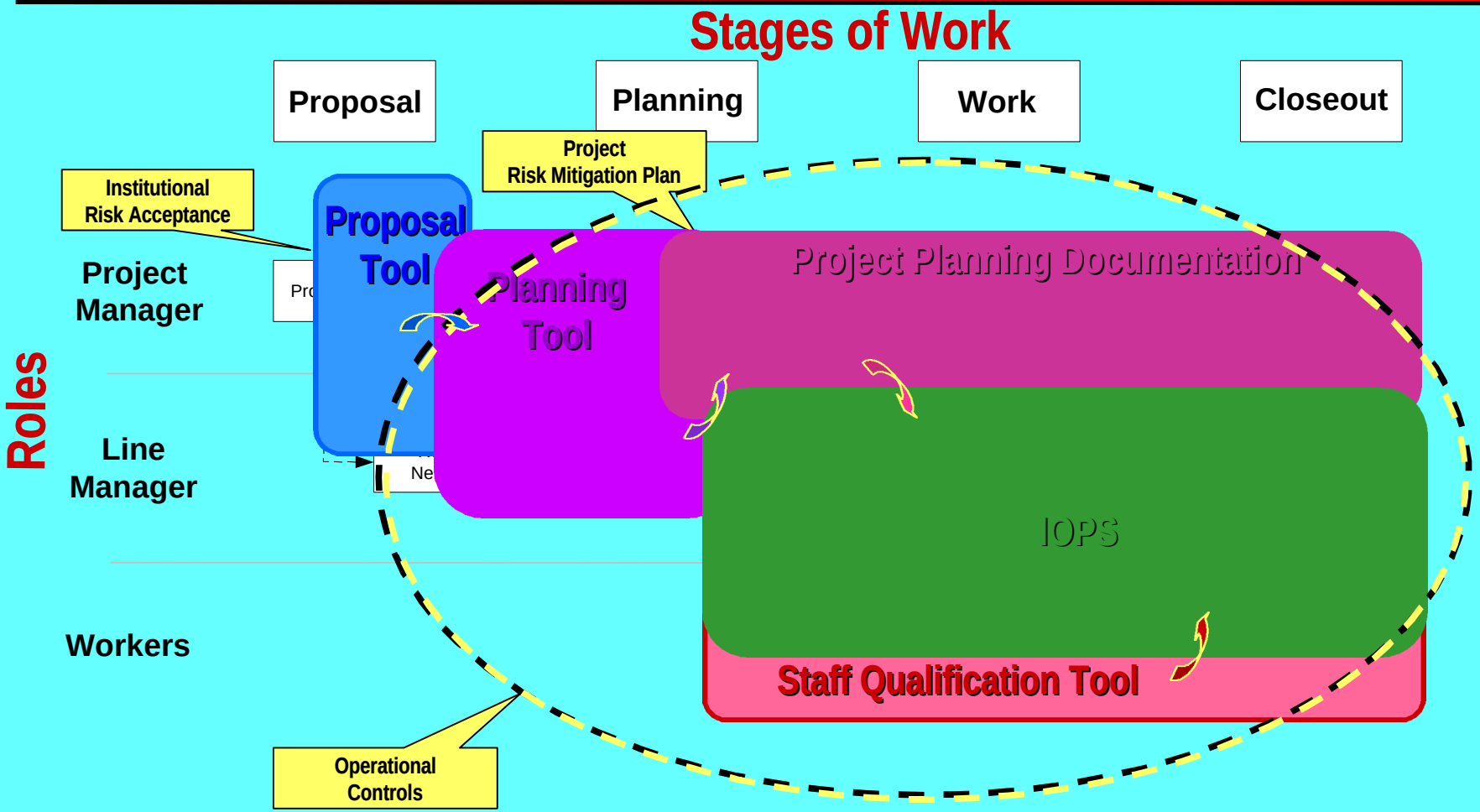
Hazard Analysis Decision Process



Hazard Groups and Elements (partial list)

- Biological
  - Animals
  - Human pathogens (e.g. BBP)
  - Recombinant DNA
- Chemicals
  - Carcinogens
  - Explosives
- Non-Ionizing Radiation
  - Lasers
  - Magnetic fields
- Radiological
  - Radioactive materials
  - Fissionable materials
- Physical
  - Exposed electrical
  - Pressure systems
  - Thermal hazarfs
- Occupational
  - Aircraft
  - Boat
  - Foreign travel
  - Remote locations
- Environmental
  - Waste disposal
  - Air emissions
  - Biological/cultural resources
  - Transportation of haz mat

Hazard Analysis Initiative an integrated suite of tools



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Development Process

- Common data elements (e.g. hazards, location names)
  - Mapping between tools
- Data exchange model
  - Data elements
  - Initiating events, responsible parties
  - Inputs (info sources), process, outputs (targets for info)
- Development of new/modified tools
- Development of new content for delivery by tools

Consensus among stakeholders!

Path Forward

Improved integration of ES&H work planning and control tools will bring:

- Empowerment of individuals who's roles require them to take action to plan and control work
- Confidence that we are finally mitigating risks all the way from Proposal to the Bench.
- Integration of processes ("cradle-to-grave"), consistent with Integrated Safety Management

Note: Increasing reliance on integrated electronic systems requires supporting enhancing and maintenance of the systems